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CENTRAL INTELLIGENCE AGENCY
INFORMATION REPORT

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COUNTRY	USSR (Kuybyshev Oblast)	REPORT	
SUBJECT	1. Engine Development at Plant No. 2, Kuybyshev 2. Layout and Personnel at Plant	DATE DISTR.	29 October 1954
DATE OF INFO.		NO. OF PAGES	5 25X1
PLACE ACQUIRED		REFERENCE NO.	RD
	This is UNEVALUATED Information	REFERENCES	

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1. In October 1946, 200 experts from the BMW Plant with their dependents (about 250) were shipped from Stassfurt to Development Plant No. 2, Upravlencheskiy. Others at the plant included about 250 experts from the Junkers plant and about 50 experts from the Askania plant. In 1950, the 50 Askania experts and their families were transferred to Moscow. The reason for this move was not given. 25X1

2. The leading German specialists included Ing. Brandtner and Dr. Ing. Scheibe, Junkers, and Ing. Prestel, BMW, chief designers; Ing. Makella, BMW, and Dipl. Ing. Dr. Singer, Junkers, technical managers; Ing. Wagner, BMW, chief in charge of the test stand; Dr. Ing. Scheinost, BMW, and Dipl. Ing. Deinhardt, Junkers, in charge of special projects; Ing. Treiber, Junkers, and Dipl. Ing. Heber, BMW, planning and installations; Dr. Ing. Bredendick, BMW, expert for blade production; Dr. Ing. Max Lorenz and Dipl. Ing. Hans Lorenz, Junkers, metallurgists; and Dipl. Ing. Steudel, Junkers, in charge of the laboratory. In December 1950, Dr. Christian and his son arrived at the plant. Ing. Eberschulz and the younger Christian were designers.

3. The Soviet experts at Development Plant No. 2 included Olekhovich, a former air force officer who was plant manager and chief designer until late 1950, when he was replaced by Kuznetsov, another former air force officer. Kucherenko, a 25X1

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qualified engineer and former air force officer, was technical manager; Sergeyev, a civilian engineer, was chief of the test stands; Obsharov, a former air force engineer, was expert for thermodynamics; Engineer Kvasov, a former air force officer, was in charge of the designing office; civilian engineer Maderanskiy was in charge of jigs and fixture designing; engineer Zayets was chief mechanic; engineer Barsukov was chief in charge of power supply; and Polyakov was chief metallurgist.

4. [redacted] Development Plant No. 2 was also referred to under the cover designation "Kuybyshev No. 78". Postfach 26 was used for the German experts. The plant was equipped with 300 to 350 machine tools of all types; all of them were in operation and generally in good condition. The work force included about 1,500 Soviets and 500 Germans working three shifts. Power was supplied from Kuybyshev on a 35,000-volt transmission line (see layout sketch on page 5). 25X1
5. The development activities included improvement work on the OO3C-type turbojet engine, which started in October 1946 and ended in 1947, the development of the new O12-type turbojet engine from early 1948 to late 1949, and the O22-type turboprop power plant. After 1949, OO3C-type power units were no longer seen at the plant and the last test run of an O12 turbojet unit took place in early 1950. The German designation numbers were taken over by the Soviets. [redacted] 25X1
6. Development work on the O22 turboprop engine was started in late 1949 or early 1950. In December 1951, an experimental model completed a 200-hour test run at the plant before being transferred to Moscow for further test runs. After a successful test run in Moscow which [redacted] was done in the presence of Soviet scientists, statesmen, and high-ranking officials, Kuznetsov received the Stalin Prize with 70,000 rubles and the German experts received a bonus of 30,000 rubles. The O22 was ready to be mass produced, allegedly in Kazan. In October 1951, designing and construction work started for a gear assembly to drive two counterrotating propellers by a double O22 unit. The test runs were not completed by 15 December 1951. 25X1
7. The O22-type turboprop engine was about 6.50 meters long, about one meter in diameter, and weighed about 1.3 to 1.5 tons. The power unit was equipped with an 11-stage compressor and a three-stage turbine in tandem connection. The third turbine stage had 144 turbine blades, each 140 mm long. 25X1
8. The last model of the O22, which was later transferred to Moscow, was rated at 6,800 kg thrust instead of the requested 6,000 kg and was rated at 7,800 to 8,200 rpm maximum. [redacted] the fuel consumption was slightly lower than that of a conventional power unit. [redacted] 25X1
[redacted] a mixture of diesel oil and petroleum was used and [redacted] high output obtained. German experts at the plant allegedly confirmed the correctness of this statement. The fuel smelled strongly like petroleum and was darker and apparently thicker than gasoline. 25X1
9. The solid one-piece turbine blades were drop forged in the plant from an unknown alloy. A German heat and percussion procedure effected an increased structural density of the material which, in turn, increased the tensile strength. After this process, the blades were premilled, cut, ground, and provided with a "fir tree" root fixing. The durability of the blades was amazing even to Soviet experts. There were no signs of erosion after a 200-hour test run. 25X1
10. [redacted] O22-type turboprop power units were to be installed in bombers. A double engine coupled by means of a helical module six-gear unit was to drive two three-bladed counter- 25X1

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rotating propellers about 5.50 meters in diameter. Experiments with a dual engine driving two identical counterrotating light metal propellers were conducted in November or December 1951. In December 1951, modifications were required.

11. The 022-type engine was started by a turbostarter unit developed and tested at Development Plant No. 2 and in use there since early 1951. The turbostarter unit was actuated by means of a 24-volt DC series-wound electric unit, which was cut out automatically as soon as it had reached the 35,000 to 40,000 rpm required to actuate the turbostarter unit. This unit in turn had to be accelerated to 30,000 rpm maximum to effect ignition of the 022. After the 022 had started, the turbostarter automatically stopped. This entire functional process was activated by pushing one button. The turbostarter had about 100 hp and was fueled by a mixture of castor oil, gasoline of unknown octane value, and alcohol.

12. Another project handled by the plant was the 044-type special turbojet unit, which was tested on a stand in February 1951 and put into operation in March 1951. This unit was used exclusively as a propellant in compressor tests of the 022 turboprop engine, since the electric power received proved to be insufficient for this purpose.

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the 044-type engine was used as an auxiliary power generator only and did not serve other purposes as the 022 turboprop unit had.

13. Prior to 1949, the plant only used captured German material. After these stocks had been exhausted, bottlenecks in the supply of Soviet material, especially blades and combustion chambers, frequently hampered activities. The Soviet management of the plant considered these bottlenecks to be sabotage. The supply situation had not improved by December 1951. The quality of the material supplied was generally good. Steels were of outstanding quality and had to be treated with special tools because of the great tensile strength. Most of the machine tools were manufactured at the plant of special steels.

1. Comment: In paragraph 8, "6,800 kg thrust instead of the requested 6,000 kg" should probably read "5,800 hp instead of the requested 6,000 hp".

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Legend to Layout Sketch of Plant No. 2

- 1 Engine assembly department equipped with Soviet balancing machine and 10 to 12 other machine tools. The second floor housed offices.
- 2 Experimental shop for combustion chambers.
- 3 Hardening shop equipped with one 120-kw Junkers-type annealing furnace, one 80-kw AEG annealing furnace, one 120-kw AEG shaft furnace about 3.50 meters deep and two meters in diameter, eight additional furnaces with a load of 15 to 60 kw, and two silicon carbide furnaces (10 to 30 kw) operating at a maximum temperature of 1,300° C. All other furnaces operated at 500° to 1,000° C. The second floor of the building housed offices.
- 4 Forge equipped with three pneumatic hammers, one mazut-fueled furnace, one electric furnace, and one press. The second floor housed offices.
- 5 Carpenters shop on the first floor, galvanic baths on the second.
- 6 Designing office and blueprint section.
- 7 Sheet-metal processing shop equipped with electric and autogenous welding apparatus, atomic hydrogen welding equipment, a spinning lathe, conventional lathes, and one 1,000-ton Mueller-type press.
- 8 Test stand for 012-type and 003C-type turbojet engines completed in December 1951. One test stand for 022-type engines was in operation since summer 1951 and another was still under construction in December 1951.
- 9 Test stands, one stand for compressors, one stand for 003C engines, and two stands for 012 engines, one of which was equipped with a 200-kw cradle dynamometer with about 4,400 rpm maximum.
- 10 Switching station and dispersal room.
- 11 Transformer station which changed 35 kv to 6 kv.
- 12 Oxygen station.
- 13 Boiler house.
- 14 Engine assembly.
- 15 Storage shed.
- 16 Electric workshop.
- 17 Fire department and first aid.
- 18 Material depot and testing department.
- 19 Laboratory.
- 20 Blower test stand, not in operation since 1950.
- 21 Subtransformer station 6 kv to 0.4 kv.
- 22 Gate and plant police.
- 23 Hydrogen department.
- 24 Gate.
- 25 Main road.

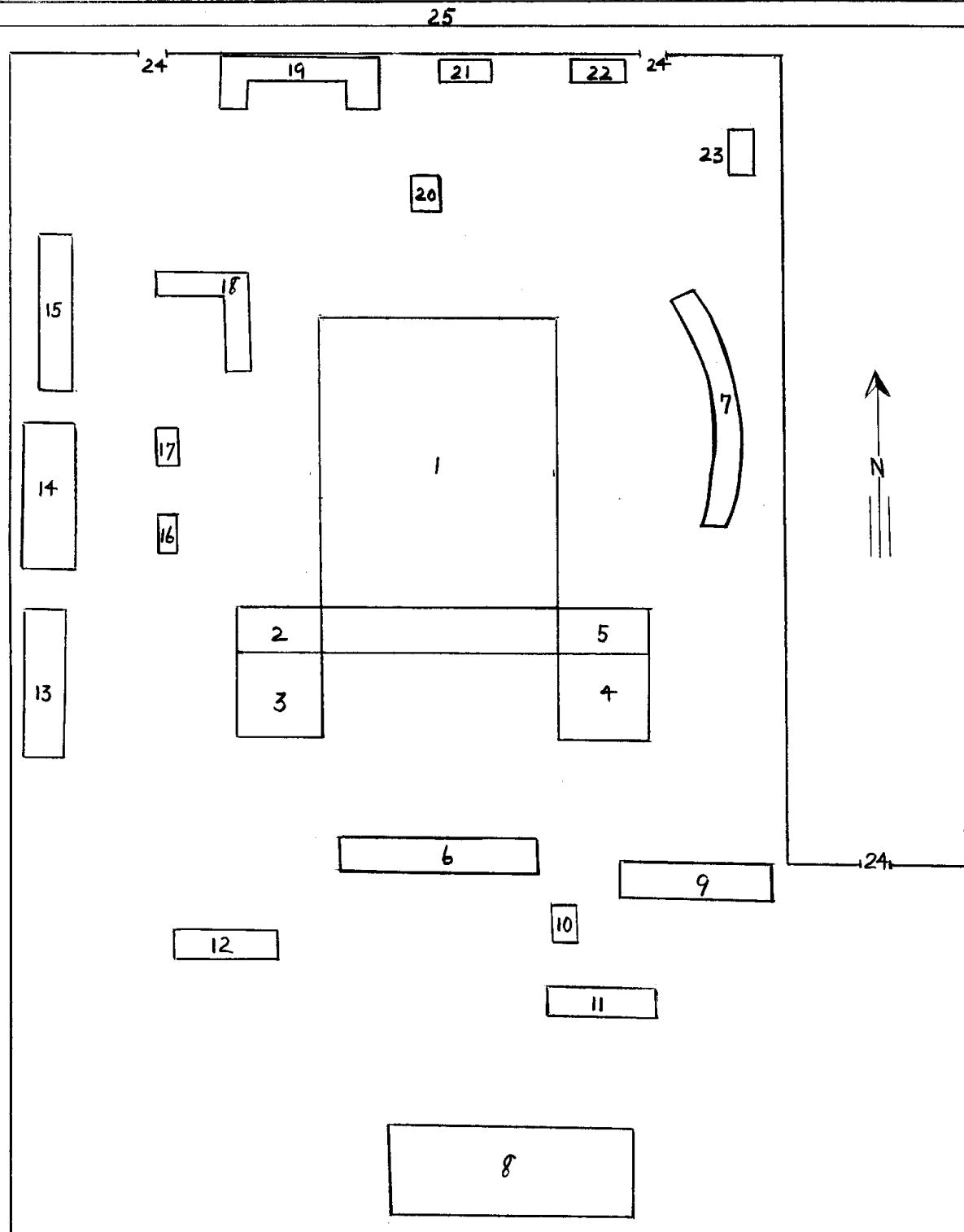
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Layout Sketch of Development Plant No. 2



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